

Memorandum

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1998

DATE: 7 June 1968

TO : C.

FROM :

SUBJECT: Residual in the Automotive Sector of the
1959 I-O Table

1. Professor Vladimir Treml proposed in a 1967 Research Analysis Corporation memorandum that a comparison of Soviet input-output data with independently derived estimates of civilian output by the industries producing transportation equipment and tractors and agricultural machinery leaves some unexplained residuals. He further suggested that the residuals probably reflect the output of uniquely military hardware in these industries.

2. Following the general procedures used by Professor Treml in identifying residuals in the agricultural machinery and transportation sectors of the 1959 Soviet I-O table, I have estimated a residual for the automotive sector. The residual represents the difference between total deliveries of finished products classified under "Automobiles and Spare Parts" (sector 36 of the 83 x 83 Soviet table) and the final demand value in sector 16 of Treml's table.

3. I attempted to price out all items listed in the instructions for the 1959 table (Instruktsiya po zapolneniyu blankov yedinovremennogo ucheta produktsii dlya promyshlennykh predpriyatiy za 1959 god po formam no. 1 i 2, pp. 1-48) under sector 36. Table 1 lists those four major categories for which I was able to obtain data. Those categories for which there are no data, (i.e. special truck tractors; trailers; and vehicles for city cleaning and sanitation), comprise only a small segment of the sector and probably would not significantly affect the sector total.

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Table 1

1959 I-O Sector 16 - Automobiles

Constant rubles

| | |
|----------------------------------------|-----------------------|
| Sales of Automobiles and Jeeps | 353,352,450 <u>a/</u> |
| Sales of Trucks and Buses of All Types | 683,677,690 <u>b/</u> |
| Sales of 2-Wheeled Motor Vehicles | 238,135,000 <u>c/</u> |
| Subtotal | 1,275,165,140 |
| Production of Spare Parts | 406,300,000 <u>d/</u> |
| Total | 1,681,465,140 |
| I-O Final Demand | 1,822,600,000 |
| Sales - without spare parts | 1,275,165,140 |
| Residual | 547,434,860 |
| I-O Final Demand | 1,822,600,000 |
| Sales - with spare parts | 1,681,465,140 |
| Residual | 141,134,860 |

a. Automobile sales -- I used the production figures in the SPIOR detail list for the seven types of automobiles listed for 1959. I used retail prices for the Moskvich sedans, the ZIM sedan, and the Volga as reported in a number of sources. Where several retail prices were given for the same auto, I used that price that seemed the most reasonable. I arbitrarily assigned prices to the ZIL limousine and the Chaika, but only a total of 300 were produced in 1959 so any error is slight. For the GAZ-69 and 69A jeep, I priced out total production at enterprise wholesale price plus 5 percent for distribution charges. Undoubtedly some jeeps were sold to kolkhozy at somewhat higher prices, but the error involved compensates partially for the error of ignoring the fact that some sales of automobiles may be recorded in institutional consumption at less than retail prices.

b. Truck and bus sales -- I subtracted deliveries to kolkhozy (as described below) from the SPIOR detail list and priced out the remaining vehicles at enterprise wholesale price plus 5 percent for distribution charges. The

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handbook states that 76,300 trucks were delivered to agriculture in 1959. This is approximately 20 percent of all truck production. The trucks most heavily used by agriculture were: GAZ-51, 93; ZIL-157, 157k, 164, 164A; URAL-ZIS; MAZ-200, 500; MOSKVICH-430; and the UAZ-450. If I take 20 percent of each I come up with a total of 65,700 and to get a grand total of 76,300, I added an additional 6,000 GAZ-51 and 4,600 ZIL-164. If I then assume that new truck deliveries are split equally between sovkhozy and kolkhozy I get the following breakdown:

| | | | | |
|----------|--------|---------|--------------|--------------|
| GAZ-51 | 19,000 | to each | Retail price | 1,680 rubles |
| GAZ-93 | 880 | " " | " " | 1,665 " |
| ZIL-157 | 2,860 | " " | " " | 3,185 " |
| ZIL-164 | 11,560 | " " | " " | 2,200 " |
| URAL-ZIS | 1,730 | " " | " " | 2,210 " |
| MAZ-200 | 1,330 | " " | " " | 4,576 " |
| MAZ-500 | 390 | " " | " " | 5,590 " |
| MOSKVICH | 300 | " " | " " | 1,170 " |
| UAZ-450 | 100 | " " | " " | 2,990 " |

I now assume that the kolkhozy pay full retail for all vehicles while the sovkhozy pay only the distribution, etc. charges which I have arbitrarily set at 5 percent of the enterprise wholesale price. In cases where the retail price I had was less than 30 percent over wholesale, I raised it to 30 percent.

c. Two wheeled motor vehicles -- Promyshlennost' SSSR, p. 410 gives the breakdown of production. I used an estimated average price of 550 rubles for motorcycles, 350 rubles for motorolers, and 150 rubles for motorbikes and mopeds, and priced out accordingly.

d. Spare parts sales -- I used my calculations for spare parts production for tractors and agricultural machinery and found that production for 1961 was 7.8 percent greater than 1959. I then applied this percentage against my figure for automobile spare parts for 1961. (See Table 2)

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Table 2

Output of Spare Parts, 1961-65

| (1) | (2) <u>Ag. machinery a/</u> | (3) <u>Tractors a/</u> | (4) <u>Automobiles b/</u> | (5) <u>Total</u> |
|--------------------------|--------------------------------|---------------------------|------------------------------|---------------------|
| 1961 | 130 | 439 | 438 | 1,007 <u>c/</u> |
| 1962 | 143 | 468 | 451 | 1,062 <u>d/</u> |
| 1963 | 162 | 554 | 484 | 1,200 <u>e/</u> |
| 1964 | 192 | 613 | 544 | 1,349 <u>f/</u> |
| 1965 | 200 | 650 | 568 | 1,418 <u>g/</u> |
| Total | 827 | 2,724 | 2,485 | 6,036 |
| Reported total <u>h/</u> | 847 | 2,753 | 2,436 | 6,036 |
| Error | 2.4% | 1.1% | 2.0% | -- |

a. U/S estimates.

b. Residual when columns 2 and 3 are subtracted from column 5.

c. 55 million rubles less than 1962 as reported in Ek gaz., no 11, 1963, page 12.

d. 22 million rubles under plan - the plan was about 90 percent of the 1963 plan which was given as 1,192 million rubles - same source as c/ above.

e. Based on 13 percent increase over 1962 - consistent with production of tractors and ag. machinery

f. Published total (h, below) minus 1961, 62, 63, and 65.

g. NKh RSFSR v 1965 g. pp. 58-59.

h. Ekonomika Sel'skogo Khozyaistva, #5, May 1966, pp. 24-37.

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4. The estimates of sales of automobiles, jeeps, trucks, buses, and two-wheeled motor vehicles are explained in the footnotes to Table 1. The output of spare parts presented the major obstacle in this exercise as there are no reliable data available for 1959 and the only estimates I could make covered the production of all spare parts. This meant that part of my estimated output of spare parts should be classified as interindustry deliveries and part as deliveries to final demand (inventories and perhaps capital repair), but I had no way of identifying each of these two components.

5. As I was unable to separate the interindustry spare parts from the final demand spare parts, I have shown two comparisons -- total sales with spare parts and total sales without. The resulting residuals of 547 and 141 million rubles bracket the "true" value of the production of uniquely military hardware in this sector in 1959. The residuals, of course, exclude the value of military purchases of trucks and cars when the models purchased are the same as the models used in the civilian economy.

6. A residual of 140-550 million rubles is certainly large enough to cover Soviet procurement of items like combat vehicles -- in fact the OSR estimate of total procurement of all land armaments and spare parts for land armaments in 1959 is less than 300 million rubles. What should be done now is to try to make a reasonable estimate of the value of spare parts that should be subtracted from deliveries by the automotive sector to final demand. Then we might have some basis for judging whether part of some huge missing procurement categories such as missiles, aircraft, and nuclear weapons might be buried in the automotive sector of the I-O table.